

WE CLAIM

1. A network part in a cellular radio network comprising:
a base station, the base station comprising a local clock;
a network element connected to the base station via an
asynchronous data transmission connection, the network element comprising
a reference clock;

the reference clock comprising means for generating a time stamp
signal and means for sending the time stamp signal over the asynchronous
data transmission connection from the network element to the base station;
and

the base station comprising means for receiving the time stamp
signal sent over the asynchronous data transmission connection, means for
calculating on the basis of the received time stamp signal how much the time
by the local clock at the base station deviates from the time by the reference
clock, means for generating a speed correction factor for the local clock on the
basis of at least one calculated deviation, means for correcting the running of
the local clock with the speed correction factor, and a frequency synthesizer
for generating the frequencies needed at the base station by using the local
clock corrected with the speed correction factor.

2. A network part according to claim 1, wherein the speed correction
factor indicates when the supply voltage of the local clock changes.

3. A network part according to claim 2, wherein the speed correction
factor compensates for changes that gradually take place in the characteristics
of the local clock.

4. A network part according to claim 3, wherein the speed correction
factor is adjusted more than once a year.

5. A network part according to claim 1, wherein the base station
further comprises means for calculating the deviation in the transmission delay
for the time stamp signal sent over the asynchronous data transmission
connection, for comparing the deviation with a predetermined limit, and for
concluding that the accuracy of the local clock does not meet the required
level if the deviation exceeds the predetermined limit.

6. A method for performing frequency synchronization of a base station in a cellular radio network, the method comprising:

- maintaining a reference clock in a network element of the cellular radio network;
- generating a time stamp signal in the reference clock;
- transferring the time stamp signal from the network element to the base station over an asynchronous data transmission connection;
- calculating on the basis of the transferred time stamp signal how much the time by the local clock at the base station deviates from the time by the reference clock;
- generating a speed correction factor for the local clock on the basis of at least one calculated deviation;
- correcting the running of the local clock with the speed correction factor; and
- generating the frequencies needed at the base station by using the local clock corrected with the speed correction factor.

7. A method according to claim 6, wherein the speed correction factor indicates when the supply voltage of the local clock at the base station changes.

8. A method according to claim 7, wherein the speed correction factor compensates for changes that gradually take place in the characteristics of the local clock.

9. A method according to claim 8, wherein the correction is performed more than once a year.

10. A method according to claim 6, wherein the deviation in the transmission delay for the time stamp signal sent over the asynchronous data transmission connection is calculated, the deviation is compared with a predetermined limit, and if the deviation exceeds the predetermined limit it is concluded that the accuracy of the local clock at the base station does not meet the required level.